

# **TOWER CRANE ALERT**

Recent tower crane accidents in New York and in Florida have resulted in multiple fatalities. Recently even Hawaii experienced a tower crane related fatality. These events highlighted the inherently dangerous nature of work involving tower cranes. Cranes are required to be inspected at set intervals (before use, weekly, monthly, annually, & after modifications/repairs) and used in accordance with manufacturer's requirements, ASME B30.3, and HIOSH. Many fatalities have occurred when the crane boom, load line or load contacts power lines. Other incidents have happened when workers working below are struck by the load, are caught inside the swing radius, or fail to assemble/ disassemble the crane properly. Additionally, improper crane setup accounts for additional crane accidents. Cranes must be erected, dismantled and operated by competent people who have the necessary training and experience. Employers should have written procedures for each type of crane and their procedures should be based on the manufacturer's instructions, ASME B30.3, and HIOSH. The procedures should be available on site, and those involved in the work should be thoroughly familiar with them.

## **The following are some guidelines to be used by tower crane operators:**

- Comply with the manufacturer's specifications/limitations, ASME B30.3, and HIOSH Rules applicable to the operation of the tower crane.

- Cranes are to be operated only by qualified and trained personnel.

- A designated competent person must inspect all crane machinery and equipment before and during use to ensure its safe operation.

- Be sure the crane is on a firm/stable surface and level.

- During assembly/disassembly of the crane's boom, do not unlock or remove pins unless sections are blocked and secure (stable).

- Properly plan lifting operations and always supervise them appropriately.

- Watch for overhead electric power lines and maintain at least a 10-foot safe working clearance from the lines.

- Inspect all rigging prior to use; do not wrap hoist lines around the load.

- Be sure to use the correct load chart for the crane's current configuration and setup, the load weight and lift path.

- Do not exceed the load chart capacity while making lifts.

- Do not make any modifications or additions that affect the capacity or safe operation of the equipment without the manufacturer's written approval.

- Fully extend outriggers and barricade accessible areas inside the crane's swing radius.

- Raise the load a few inches, hold, verify capacity/balance, and test brake system before delivering it.

- Do not move loads over workers.

- Be sure to follow signals and manufacturer's instructions while operating cranes.

Overloading occurs when the rated capacity of a crane is exceeded while a load is being lifted and maneuvered, resulting in upset or structural failure. Overloading occurs when poorly trained personnel are allowed to operate cranes. The operator must always know the weight of the load. Some variables that affect the lifting capacity of a crane:

- The ability to lower a boom increases the radius and reduces capacity.

- The ability to extend a hydraulic boom increases the radius and reduces lifting capacity.

- The ability to lower a boom while extending a boom quickly reduces lifting capacity.

- The crane's tipping capacity can vary when the boom is positioned at the various points of the compass or clock in relation to its particular carrier frame.

The operator may neglect to extend the outriggers or the crane is positioned on soft ground.

The operator may mistakenly rely upon perception, instinct or experience to determine whether the load is too heavy and may not respond fast enough when the crane begins to feel light. Another serious condition, two-blocking, occurs when the hoist block or hook assembly comes into contact with the boom tip, causing the hoist line to break and the hook and load to fall, endangering workers below.

**Preliminary Cab Checks:**

Foundation bolts/anchors    Fire extinguisher  
Main power disconnect switch    Load chart  
Hook sheaves/swivel    Window glass  
Power contact grounding    Operations manual  
Support guys/anchors

**Tower Crane Operations Checks:**

Ladders/platforms    Control function  
Section connecting bolts/pins    Swing brake  
Safety rails/chains    Moment overloads  
Tie-in assembly(s)    Hoist overloads  
Cord and lacing welds    Trolley cable/brake  
Power cable    Sheaves  
Hydraulic hoses for leaks    Gear limits  
Gear boxes for oil level/leaks    Trolley limits  
Slewing ring bolts    Luffing limits  
Counterweights secure    Hoist limits  
Motor/winch hold-down bolts    Proximity to power lines  
Wire rope condition  
Hoist drum spooling